

IN THE CLAIMS

**The claims are amended as follows:**

Claims 1-16 (Canceled).

Claim 17 (Currently Amended): A process for preparing one or more iodinated organic substances having a molecular mass of less than 2000 (substances (S)) using:

(A) at least one free-radical-generating substance chosen from peroxides, diazo compounds, dialkyldiphenylalkanes, substances derived from tetraphenylethane, boranes and iniferter substances comprising at least one thiuram disulphide group,

(B) at least one organic substance comprising at least one ethylenic double bond, capable of adding a free radical to its ethylenic double bond,

(C) molecular iodine,

which comprises:

(1) introducing at least a fraction of (A), at least a fraction of (B) and at least a fraction of (C) into a reactor, then

(2) causing the contents of the reactor to react, while introducing therein the possible remainder of (A), the possible remainder of (B) and the possible remainder of (C), until the reactor comprises a mixture comprising one or more substances (S) [mixture (M)], and then

either the contents of the reactor are caused to react until the quantity of (B) consumed by the reaction no longer changes (variant (1)), or the reaction in progress is stopped (variant (2)), to produce said one or more iodinated organic substances having a molecular mass of less than 2000,

wherein in variant (1), the number of moles of (C) introduced into the reactor expressed relative to the number of moles of (A) introduced into the reactor is greater than or

equal to 90% and less than 200% and the number of moles of (C) introduced into the reactor expressed relative to the number of moles of (B) introduced into the reactor is more than 0.5% and less than 200%, and

wherein in variant (2) the number of moles of (C) introduced into the reactor expressed relative to the number of moles of (A) introduced into the reactor is greater than or equal to 20% and less than 100% and the number of moles of (C) introduced into the reactor expressed relative to the number of moles (B) introduced into the reactor is greater than or equal to 0.01% and less than 5%.

Claim 18 (Previously Presented): The process according to Claim 17, wherein the substance(s) (S) have a molecular mass of less than 1000.

Claim 19 (Previously Presented): The process according to Claim 17, wherein the substance(s) (S) have a number-average molecular mass of less than 500.

Claim 20 (Cancelled)

Claim 21 (Cancelled).

Claim 22 (Cancelled).

Claim 23 (Previously Presented): The process according to Claim 17, comprising variant (2), wherein the reaction in progress is stopped when the color of the contents of the reactor changes from a dark color to a light color.

Claim 24 (Cancelled)

Claim 25 (Cancelled)

Claim 26 -36 (Cancelled)

Claim 37 (Previously Presented): The process according to Claim 17, comprising variant (1).

Claim 38 (Previously Presented): The process according to Claim 37, wherein the number of moles of (C) introduced into the reactor expressed relative to the number of moles of (A) introduced into the reactor is greater than or equal to 100% and less than 150% and the number of moles of (C) introduced into the reactor expressed relative to the number of moles of (B) introduced into the reactor is more than 0.5% and less than 150%.

Claim 39 (Previously Presented): The process according to Claim 17, comprising variant (2).

Claim 40 (Previously Presented): The process according to Claim 39, wherein the reaction in progress is stopped by cooling the contents of the reactor.

Claim 41 (Previously Presented): The process according to Claim 39, wherein the number of moles of (C) introduced into the reactor expressed relative to the number of moles of (A) introduced into the reactor is greater than or equal to 20% and less than 90% and the

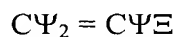
number of moles of (C) introduced into the reactor expressed relative to the number of moles (B) introduced into the reactor is greater than or equal to 0.1% and less than 5%.

Claim 42 (Previously Presented): The process according to Claim 37, further comprising isolating at least one substance (S) from the mixture (M) after the contents of the reactor are caused to react until the quantity of (B) consumed by the reaction no longer changes.

Claim 43 (Previously Presented): The process according to Claim 39, further comprising isolating at least one substance (S) from the mixture (M) after the reaction in progress is stopped.

Claim 44 (Previously Presented): The process according to Claim 17, wherein all of each of (A), (B) and (C) are introduced into the reactor in (1).

Claim 45 (New): The process according to Claim 17, wherein the at least one organic substance comprising at least one ethylenic double bond, capable of adding a free radical to its ethylenic double bond, is at least one compound corresponding to the formula:



where

- the  $\Psi$  symbols represent, independently of each other and of  $\Xi$ , (i) a hydrogen atom, (ii) a halogen atom other than iodine, or (iii) a linear or branched C<sub>1</sub>-C<sub>20</sub> alkyl group;
- $\Xi$  represents (i) a halogen atom other than iodine, (ii) a phenyl group optionally substituted with one or more atoms chosen from halogen atoms other than iodine and C<sub>1</sub>-C<sub>8</sub> alkyl groups, (iii) -O-C(=O)- $\Omega$ , (iv) a nitrile group, (v) -C(=O)-O- $\Omega$  or (vi)

$\text{-C(=O)-N-}\Omega$ ; and

-  $\Omega$  represents (i) a hydrogen atom, or (ii) a saturated or ethylenically unsaturated or aromatic  $\text{C}_1\text{-C}_{20}$  hydrocarbon group.

Claim 46 (New): The process according to Claim 17, wherein the at least one organic substance comprising at least one ethylenic double bond, capable of adding a free radical to its ethylenic double bond, is at least one of vinyl chloride, vinylidene chloride, trichloroethylene, chlorotrifluoroethylene, vinyl fluoride, vinylidene fluoride, trifluoroethylene, tetrafluoroethylene, hexafluoropropylene, styrene, vinyl acetate, acrylic acid, methyl acrylate, ethyl acrylate, n-butyl acrylate, 2-ethylhexyl acrylate, methacrylic acid, methyl methacrylate, n-butyl methacrylate, ethylene, propylene and butadiene.